Talk Outline

• Overview of Center
• ERMA™ background and design process
  • Web based GIS technology to assist in environmental response
• Examples of ERMA’s capabilities
  • Screen captures
  • Meeting room has limited wireless
Coastal Response Research Center (CRRC)

• CRRC is partnership between NOAA’s Office of Response and Restoration (ORR) and University of New Hampshire

• CRRC Mission:
  • Develop new approaches to spill response and restoration through research/synthesis of information
  • Serve as a resource for ORR and NOAA
  • Serve as a hub for spill research, development, and technical transfer
    • Oil spill community (e.g., RRTs, internationally)
Continuum of “Response”

Response (24 hours)

Many Diverse Datasets

Emergency Response

Assessment and Restoration

Restoration - Recovery (Years to Decades)
A Picture is Worth a Thousand Words...

- Diverse datasets interlaced on single map to visualize complex nature of situation
Technological Advances

Past

• Software and hardware were cost prohibitive
• Difficult to obtain accurate data
• Advanced training to produce products
• Data limited to working desktop computer
• Limited product output
  • Hard copy maps
Technological Advances

**Today**

- Increase software options available
- Compact and inexpensive data acquisition
- Easy to use interfaces
- Systems portable and flexible - network interface
- Products more complex
- Web accessible (ArcIMS, Google Maps, Google Earth, Open Source WebGIS)
Advantage of Web Based GIS Platform for Responses

Goals

• Provide resource managers with information to make decisions
• Integrate and synthesize various types of information
• Provide fast visualization of current information
• Improve communication and coordination among responders and stakeholders
Functional Web GIS Platform for Response

• Package data in a well-designed management, visualization and analysis tool:
  • Easily accessible - field and command
  • User friendly
  • Quick to display
  • Capable of real-time data display
  • Simple to update/download from
  • Secure
Project Partners: Technical Advisers

**NOAA**
- Office of Response and Restoration
- Coastal Services Center
- Office Coast Survey
- Weather Service
- Gulf of ME Ocean Observing System

**UNH**
- Joint Hydrographic Center
- Joint Center for Ocean Observing Technology
- Cooperative Institute for Coastal and Estuarine Environmental Technology
- Coastal Ocean Observing and Analysis
- Research Computing Center
- Earth Systems Data Collaborative

**Additional Partners**
- US Coast Guard
- US EPA
- NH Dept. Environmental Services
- ME Dept. Environmental Protection
- NH Fish and Game
- NH Coastal Manager
- NH Div. Emergency Services
- Piscataqua River Cooperative
- FL Fish & Wildlife
What Can be Displayed?

- Real-time observations and monitoring data
  - Observation buoys - What is being collected?
  - Re-direct to the data source
- Data links to documents and websites
  - Restoration Project
    - Summary PDFs
    - Websites
- Field data & georeferenced photos
  - International Coastal Clean-up Surveys
    - Specific data marine debris items
    - Photos collected during survey
Easy to Access Data Types

Authentication Required

Enter username and password for "phri" at https://portsmouthresponse.unh.edu

User Name:
Mchele.Jacobi

Password:
***********

Use Password Manager to remember this password.

OK Cancel
Critical Datasets for Environmental Response

ERMA Portsmouth, NH

Incident Information
- Forecast (light)
- Forecast (medium)
- Forecast (heavy)
- Forecast (uncertainty)

Resources at Risk NH
Shoreline Classification (line)
- 10D+-Scrub shrub wetlands (most sen
- 10A-Salt & brackish-water marsh
- 10A++-Salt & brackish-water marsh (moderate)
- 9A-Sheltered tidal flats
- 9A+-Sheltered tidal flats (most sens)
- 8C-Sheltered riprap
- 8C+-Sheltered riprap (most sens)
- 86-Sheltered, solid man-made structure
- 86+-Sheltered, solid man-made structure
- 8A-Sheltered rocky shores
- 8A+-Sheltered rocky shores (most sens)
- 7+-Exposed tidal flats (most sens)
- 68-Riprap
- 68+-Riprap (most sens)
- 6A-Gravel beaches
- 6A+-Gravel beaches (most sens)
- 5-Mixed sand & gravel
RT 4 & 16 TO WOODBURY AVE EXIT IN NEWTINGTON, EAST ON MARKET ST., NORTH ON KEARSAGE WAY, SE ON PREBLE WAY AT IRVING ENTERANCE, UNDER I-95 BRIDGE.
Real-Time Vessel Traffic from AIS
Raster Layers as Base Maps
Weather and Buoy Observations
Interactive Tools

**ERMA Portsmouth, NH**

**Map**  **Info**  **About**

*Legend*  *Layer*  *Data*  **Tools**

**Zoom to location**

<table>
<thead>
<tr>
<th>Name</th>
<th>Color</th>
</tr>
</thead>
</table>

**Create Region of Interest**

**Comment**

- **Draw**
- **Clear**
- **Update**
- **Commit**

**Show Regions of Interest**

**List**  **Go**

**Upload**

Map data ©2008 Tele Atlas - Terms of Use

2007 University of New Hampshire
Interactive Tools
Interactive Tools
Interactive Tools
Interactive Tools
How Does This Help in Environmental Response?

• Hypothetical Spill
  • Uploaded trajectory - movie display
  • Where did it hit relative to ESI layer?
    - See exact classification or download and print map
    - View data sources
  • Show results of Shoreline Cleanup and Assessment Team (SCAT) work
  • Visualize spill relative to ship traffic
  • Gather current weather observations from buoys
  • Display existing environmental contaminant data

(DEMO)
Practical Implementation of ERMA™

- Assist with spill preparedness
  - Display jurisdictional boundaries, specially regulated areas, areas of socio-economic importance
- Access points for cleanup
- Staging areas and command centers
- Regional documentation, points of contact, etc.
Practical Implementation of ERMA™

- Assist in coordinating response efforts
  - Visualize magnitude and extent
  - Triage sites for action
  - Track progress of clean-up
  - Access real-time data
  - Upload data from the field and access forms
  - Increase communication
Practical Implementation of ERMA™

- Define the extent of potential impacts
  - General habitat and land use information
  - Areas of biological significance - haul outs, rookeries, nesting grounds, essential or critical habitat
  - Species-specific data - biological resources in the region - threatened or endangered?
  - Where is there current monitoring data
Practical Implementation of ERMA™

• Assist in Recovery and Restoration
  • Access existing environmental monitoring sites
  • Assist with sampling design
  • Inventory restoration projects
  • Locate long-term monitoring sites
  • Coordinate with regional projects
Coastal Response Research Center
Website
www.crrc.unh.edu